

**WHAT IS CLAIMED IS:**

1. A control system for monitoring characteristics of one or more spray nozzles used in a flue gas cooling system wherein the one or more nozzles are of the type that operate to receive pressurized liquid and pressurized air and to provide an atomized liquid oriented at the flue gas to thereby cool the same, comprising:
  - a liquid supply line coupled with the one or more spray nozzles including a flow meter disposed therein for sensing a flow rate of liquid supplied to the one or more spray nozzles;
  - a compressed air supply line including an air regulation section disposed to provide an amount of compressed air supplied to the one or more spray nozzles; and
  - a spray controller coupled with the flow meter and the air regulation section, the controller being disposed to provide an output signal to indicate a performance characteristic of the spray nozzles based on the measured liquid pressure and/or measured air pressure.
2. The invention of claim 1 further comprising:
  - an adjustable liquid flow valve disposed in the liquid spray supply line disposed to receive a control signal from the controller to adjust the amount of liquid supplied to the one or more spray nozzles; and
  - a temperature sensor located in proximate relation to the flue gases and disposed to provide a temperature sensing signal to the controller, wherein the controller in

response to receipt of the temperature sensing signal, adjusts control signal supplied to the liquid flow valve.

3. The invention as in claim 1 wherein the controller provides a signal indicative of a worn nozzle when the detected liquid flow exceeds a selected threshold for given pressure conditions.

4. The invention as in claim 1 wherein the controller provides a signal indicative of a blocked liquid nozzle orifice when the detected liquid flow is less than a selected threshold for given pressure conditions.

5. The invention as in claim 1 wherein the controller provides a signal indicative of a worn air orifice when the detected air flow rate is greater than a selected threshold for given pressure conditions.

6. The invention as in claim 1 wherein the controller provides a signal indicative of a blocked air nozzle orifice when the detected liquid flow is less than a selected threshold for given pressure conditions.

7. A method for monitoring the operating conditions of one or more spray nozzles of the type used in the cooling of flue gases and that is operative to receive

pressurized liquid and pressurized air and to supply an atomized liquid spray comprising the steps of:

determining a required pressure flow rate for various operating liquid flow rates being applied to the one or more spray nozzles;

monitoring the actual liquid flow rate being applied to the one or more spray nozzles; and

providing a signal indicative of a malfunction when the detected liquid flow is greater than a maximum allowable percentage error.

8. The invention as in claim 7 further comprising the step of:

monitoring the actual air flow rate being applied to the one or more spray nozzles; and

providing a signal indicative of a malfunction with the detected air flow is greater than a maximum allowable percentage error.